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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/692,420	10/19/2000	Hooman Darabi	39385/CAG/B600	2204

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CHRISTOPHER C. WINSLADE
MCANDREWS, HELD & MALLOY
500 W. MADISON STREET
SUITE 3400
CHICAGO, IL 60661

EXAMINER

MILORD, MARCEAU

ART UNIT PAPER NUMBER

2618

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	12/27/2006	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No. 09/692,420	Applicant(s) HOOMAN DARABI ET AL	
	Examiner Marceau Milord	Art Unit 2618	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 October 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-45 and 47-80 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 55-80 is/are allowed.
- 6) ☒ Claim(s) 1-10, 23-30, 43-45 and 47-49 is/are rejected.
- 7) ☒ Claim(s) 11-22, 31-42 and 50-54 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

ETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1- 10, 23-30, 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bazarjani et al (US Patent No 5982315) in view of Hornak et al (US Patent No 567822).

Regarding claims 1-8, Bazarjani et al discloses a filter circuit (figs. 1-2), comprising: a plurality of cascaded filters (24 and 28 of fig. 1); and a bypass circuit coupled across one of the cascaded filters (col. 5, lines 3-10; col. 5, lines 36-59).

However, Bazarjani et al does not specifically disclose the feature of a bypass circuit that comprises a switch, wherein the cascaded filters each comprises a biquad filter.

On the other hand, Hornak et al, from the same field of endeavor, discloses a time-share mixer circuit and a frequency converter, an I-Q modulator, and an I-Q demodulator. A switching signal drives the time-share mixer circuit to alternate between two output signals (col. 6, lines 22-51). Furthermore, Hornak shows in figure 19, a filter that receives the signal from the output

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port of the time-share mixer. The filter comprises a plurality of cascaded RC filter stages and a sample-and-hold element. The first RC filter stage includes a resistor that receives the signal and couples it to an input of an amplifier. A switching element, driven by the switching signal from the port of the mixer circuit, alternately connects a capacitor and a capacitor 289 to the input of the amplifier. Similarly, the second filter stage includes a resistor that receives the signal from the first filter stage and couples it to an input of an amplifier (col. 19, lines 16-36). A switching element, driven by the switching signal from the port of the mixer circuit, alternately connects a capacitor 297 and a capacitor 299 to the input of the amplifier 293. The third filter stage includes a resistor that receives the signal from the second filter stage and couples it to an input of an amplifier. A switching element, driven by the switching signal from the port of the mixer circuit, alternately connects a capacitor 307 and a capacitor 309 to the input of the amplifier 303. The output from the third filter stage is provided to the sample-and-hold element and thence to the A-to-D converter. The sample-and-hold element is controlled by the switching signal source (figs. 17-19; col. 18, line 45- col. 19, line 24) Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the technique of Hornak to the system of Bazarjani in order to cascade multiple stages of input filter circuitry to customize the control system for specific frequencies and amplitudes of the signals to be filtered.

Regarding claim 9, Bazarjani et al as modified discloses a filter circuit (figs. 1-2), comprising: a plurality of cascaded filters wherein the filters each comprises a pole and a zero (col. 5, lines 3-59; col. 5, line 39- col. 6, line 43).

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Regarding claim 10, Bazarjani et al as modified discloses a filter circuit (figs. 1-2), wherein the filters each comprise a complex filter with a pole and a zero (col. 5, lines 3-59; col. 5, line 39- col. 6, line 43).

Regarding claims 23-28, 43, Bazarjani et al discloses a filter circuit (figs. 1-2), comprising: a plurality of filters (24 and 28 of fig. 1); and a bypass means for bypassing at least one of the cascaded filters (col. 5, lines 3-10; col. 5, lines 36-59).

However, Bazarjani et al does not specifically disclose the features of a bypass means that comprises a plurality of switches each being coupled across a different one of the cascaded filters, wherein the switches each comprises means for being individually controlled; wherein the cascaded filters each comprise a biquad filter.

On the other hand, Hornak et al, from the same field of endeavor, discloses a time-share mixer circuit and a frequency converter, an I-Q modulator, and an I-Q demodulator. A switching signal drives the time-share mixer circuit to alternate between two output signals (col. 6, lines 22-51). Furthermore, Hornak shows in figure 19, a filter that receives the signal from the output port of the time-share mixer. The filter comprises a plurality of cascaded RC filter stages and a sample-and-hold element. The first RC filter stage includes a resistor that receives the signal and couples it to an input of an amplifier. A switching element, driven by the switching signal from the port of the mixer circuit, alternately connects a capacitor and a capacitor 289 to the input of the amplifier. Similarly, the second filter stage includes a resistor that receives the signal from the first filter stage and couples it to an input of an amplifier (col. 19, lines 16-36). A switching element, driven by the switching signal from the port of the mixer circuit, alternately connects a capacitor 297 and a capacitor 299 to the input of the amplifier 293. The third filter stage includes

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a resistor that receives the signal from the second filter stage and couples it to an input of an amplifier. A switching element, driven by the switching signal from the port of the mixer circuit, alternately connects a capacitor 307 and a capacitor 309 to the input of the amplifier 303. The output from the third filter stage is provided to the sample-and-hold element and thence to the A-to-D converter. The sample-and-hold element is controlled by the switching signal source (figs. 17-19; col. 18, line 45- col. 19, line 24). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the technique of Hornak to the system of Bazarjani in order to cascade multiple stages of input filter circuitry to customize the control system for specific frequencies and amplitudes of the signals to be filtered.

Regarding claim 29, Bazarjani et al as modified discloses a filter circuit (figs. 1-2), wherein the filters each comprise means for generating a pole and zero (col. 5, lines 3-59; col. 5, line 39- col. 6, line 43).

Regarding claim 30, Bazarjani et al as modified discloses a filter circuit (figs. 1-2), wherein the filters each comprises a complex filter, the complex filters each comprising means for generating a pole and zero (col. 5, lines 3-59; col. 5, line 39- col. 6, line 43).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary

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skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 44-45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ali (US Patent No 6590943 B1) in view of Becker et al (US Patent No 5612975).

Regarding claims 44-45, Ali discloses a filter circuit (fig. 8), comprising: a biquad filter; and a polyphase filter (86 of fig. 8) coupled to the biquad filter (col. 6, lines 38-47).

However, Ali does not specifically disclose the features of a plurality of polyphase filters including the polyphase filter, the biquad filters being intertwined with the polyphase filters.

However, Becker et al shows in figure 2, a first sampler that produces a digital first sampler output where the first sampler output is resampled by a controllable digital filter, and this filter is a multirate polyphase filter capable of either rational resampling or interpolation, or a variable rate polyphase filter capable of a continuously variable resampling at any continuous interpolation and/or decimation. In addition, the digital sampler output stream is supplied to each input of a plurality of interpolators of the polyphase filters (col. 5, lines 42-65; col. 6, lines 18-44; col. 10, lines 20-48). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the technique of Becker to the communication system of Ali in order to use polyphase filters that can provide low order anti-aliasing filtering and a reduction in the sampling rate.

5. Claims 47-49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ali (US Patent No 6590943 B1) in view of Becker et al (US Patent No 5612975) as applied to claims 44-45 above, and further in view of Hornak et al (US Patent No 567822).

Regarding claims 47-49, Ali and Becker disclose everything claimed except the features of a bypass circuits that comprise a switch.

However, Hornak disclose a switching signal that drives the time-share mixer circuit to alternate between two output signals (col. 6, lines 22-51). Furthermore, Hornak shows in figure 19, a filter that receives the signal from the output port of the time-share mixer. The filter comprises a plurality of cascaded RC filter stages and a sample-and-hold element. The first RC filter stage includes a resistor that receives the signal and couples it to an input of an amplifier. A switching element, driven by the switching signal from the port of the mixer circuit, alternately connects a capacitor and a capacitor 289 to the input of the amplifier. Similarly, the second filter stage includes a resistor that receives the signal from the first filter stage and couples it to an input of an amplifier (col. 19, lines 16-36). A switching element, driven by the switching signal from the port of the mixer circuit, alternately connects a capacitor 297 and a capacitor 299 to the input of the amplifier 293. The third filter stage includes a resistor that receives the signal from the second filter stage and couples it to an input of an amplifier. A switching element, driven by the switching signal from the port of the mixer circuit, alternately connects a capacitor 307 and a capacitor 309 to the input of the amplifier 303. The output from the third filter stage is provided to the sample-and-hold element and thence to the A-to-D converter. The sample-and-hold element is controlled by the switching signal source (figs. 17-19; col. 18, line 45- col. 19, line 24). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the technique of Hornak to the modified system of Becker and Ali in order to cascade multiple stages of input filter circuitry to customize the control system for specific frequencies and amplitudes of the signals to be filtered.

Allowable Subject Matter

6. Claims 55-80 are allowed.

Allowable Subject Matter

7. Claims 11-22, 31-42, 50-54 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

8. Applicant's arguments with respect to claims 1-10, 23-30, 43-45, 47-49 have been considered but are moot in view of the new ground(s) of rejection.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marceau Milord whose telephone number is 571-272-7853. The examiner can normally be reached on Monday-Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew D. Anderson can be reached on 571-272-4177. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

MARCEAU MILORD


MARCEAU MILORD
PRIMARY EXAMINER

Marceau Milord

Primary Examiner

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